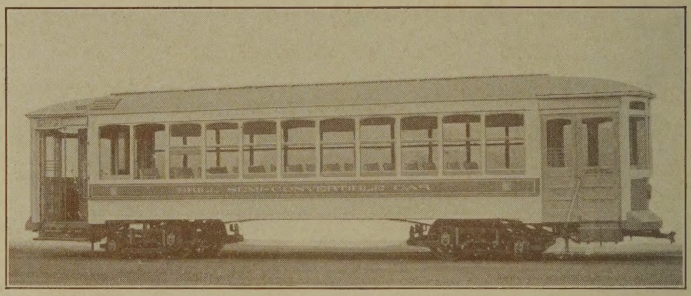
Vol. IV NOVEMBER, 1910 No. 11

BRILL MAGAZINE

George Street
Sydney, Australia.

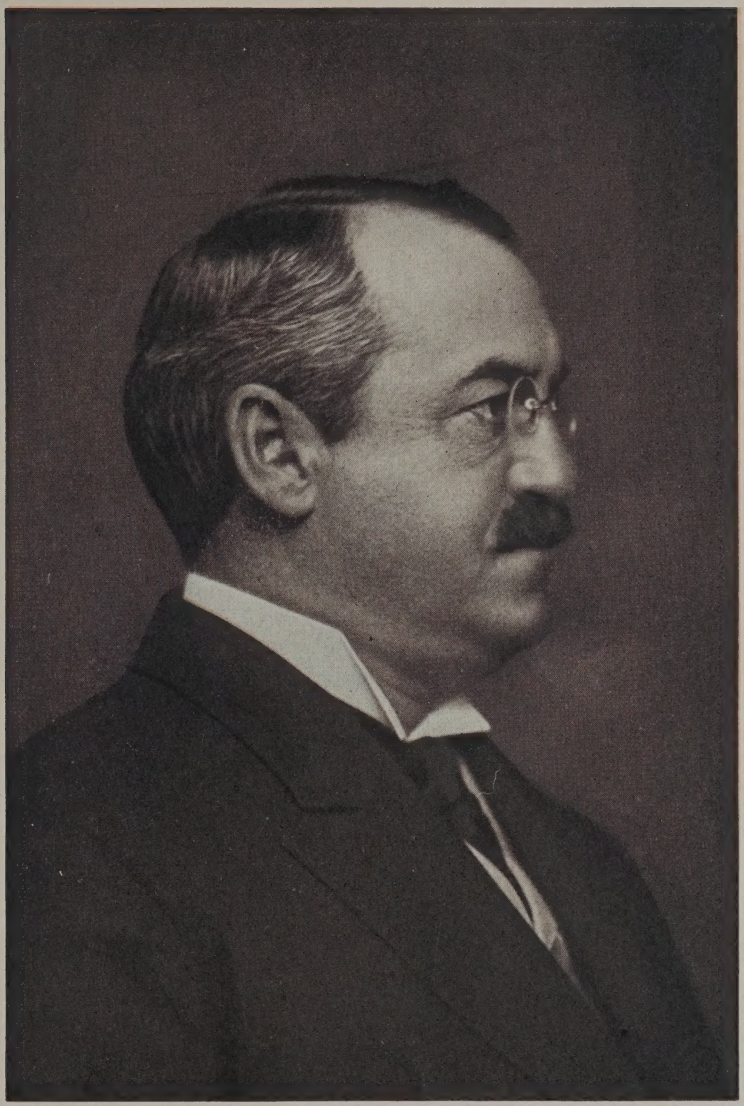


BRILL PLAIN ARCH ROOF CAR

We have said a good deal about cutting down weight by using the Brill Plain Arch Roof and its providing a much stronger roof than possible in the monitor form. We have talked about the increased head room, the advantages in connection with ventilating systems, the higher windows that can be used and the improvement in the window arrangement especially with the Brill semi-convertible system. But we have not as yet put one word in print about the Brill Plain Arch Roof being absolutely moisture proof. No matter how well a monitor roof is constructed it has joints that under unusually heavy stresses are liable to come apart enough to let in moisture. The Brill Plain Arch Roof is covered with canvas made in a single piece without seams and is therefore absolutely water proof.

THE J. G. BRILL COMPANY

PHILADELPHIA - - - PENNSYLVANIA



C. G. Goodhue

BRILL MAGAZINE

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CALVIN G. GOODRICH

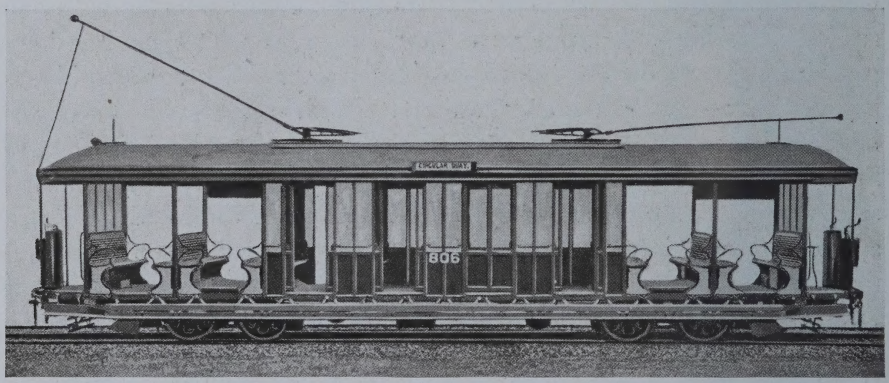
[WITH PORTRAIT INSERT]

CALVIN G. GOODRICH, President of the Twin City Rapid Transit Company and the Duluth-Superior Traction Company, was born in Oxford, Ohio, March 12, 1856, and in 1868, with his father, moved to Minneapolis. Mr. Goodrich has the unusual record of having been connected with one road during his entire electric railway career in which he has held practically every position from bookkeeper to president, and to him is largely due the present high standard to which these two companies have attained. In 1887 he entered the employ of the Minneapolis Street Railway Company as bookkeeper. One year later he was elected secretary of the company and in 1888 became a director. He was appointed superintendent in 1883 and shortly afterwards general manager in which capacity he served until 1886, when he was elected vice-president and general manager and resigned as secretary. In 1891 the Minneapolis Street Railway Company, the St. Paul City Railway Company and the Minneapolis & St. Paul Suburban Railway Company were merged through the formation of the Twin City Rapid Transit Company and Mr. Goodrich became vice-president and general manager of that company; later he was elected managing director. On March 16, 1909, after the death of Mr. Thomas Lowry, he was elected president of the Twin City Rapid Transit Company. Mr. Goodrich was elected president of the American Street & Interurban Railway Association in 1907. The two companies of which Mr. Goodrich is president have a total capitalization of $50,403,000 and own all the traction properties of Minneapolis, St. Paul, Duluth and Superior, aggregating over 450 miles of track. They also own two large parks and operate a number of fast steamboats and three double-end ferry boats on Lake Minnetonka.

CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE

SYDNEY, AUSTRALIA*

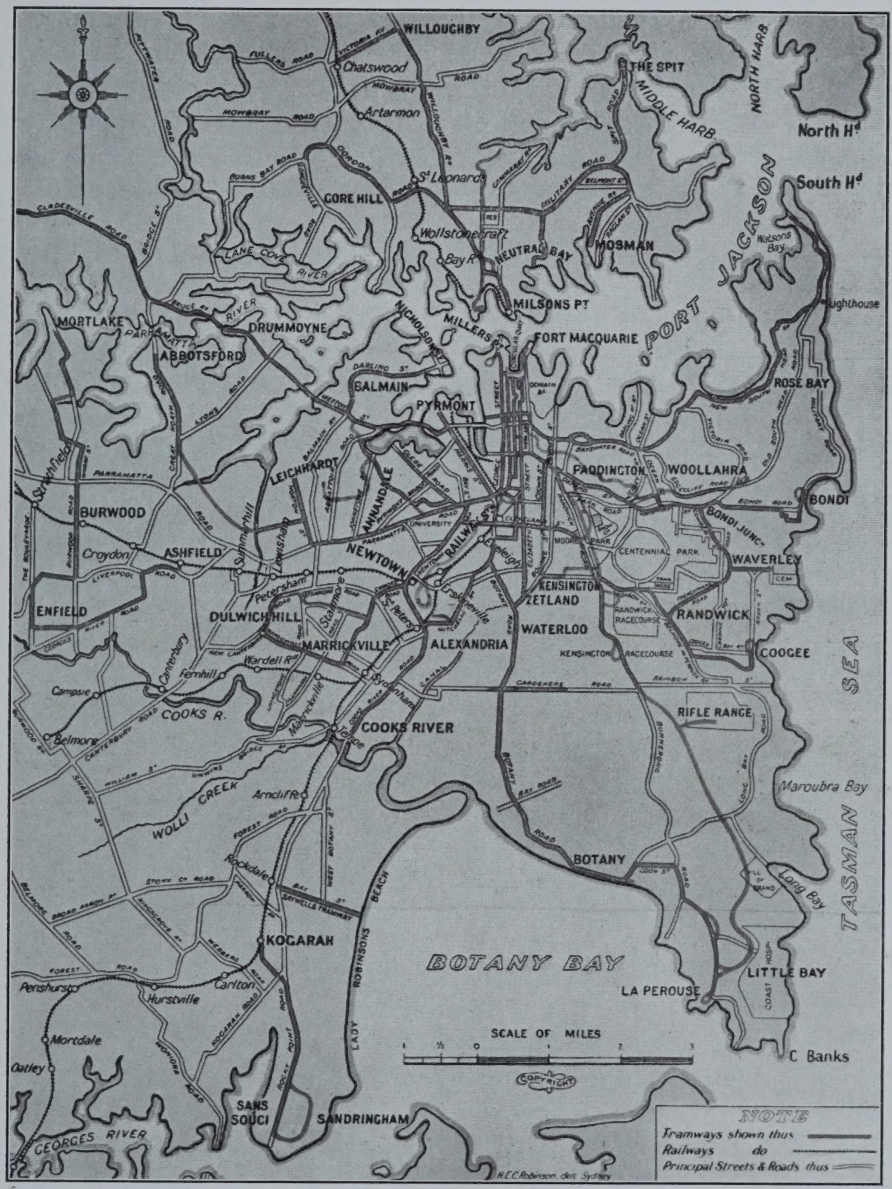
SYDNEY, the capital and metropolis of New South Wales, is situated on the southeastern coast of Australia. It ranks fourth amongst British ports in value of trade and is second only to London in taxable property. The city proper is on the southern side of one of the finest harbors in the world and is connected by numerous ferries with North Sydney and other sections on



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—The Climatic Conditions in Sydney demand a Car of this Type with both Open and Closed Compartment—The Car is 44 ft. 4 in. Long and has a Seating Capacity of 80 Passengers

the harbor and by electric and steam tram lines with the suburbs on the landward sides. Trunk lines extend up and down the coast and to the principal cities in the interior of the state, coasting steamers operate on regular schedules to points on the eastern and southern coasts of the Continent and five lines of European steamers and two of American furnish the foreign communication. The population is 600,000 in round numbers, showing a growth of about 100,000 in the

* This is the twenty-third article of this series. The former articles have had as their subjects the style of car used in the following cities: Philadelphia, New York, Detroit, Chicago, Baltimore, London, Washington, New Orleans, Boston, Denver, Atlanta, Portland (Ore.,) Norfolk, Lisbon, Milan, Moscow, Winnipeg, Glasgow, Tokyo, Brussels, Cleveland and Richmond.



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—Sydney Has a Population of 600,000—The Railway System is Owned by the State Government—184 Miles of Track are Electrically Operated and 1000 Cars in Service

last ten years. The climate is mild, the mean temperature in summer being 71° Fahr. and winter 54° ; the extremes recorded during a long period are 36° and 108° ; average annual rainfall 49 inches.

It will be seen from the map of the city and surroundings that the railway lines converge in four streets extending north and south about a mile between Circular Quay and the Central Railway Station. This

Conditions Which Govern the Type of Car for City Service—Circular Quay From Which Ferries and River Steamers Ply Between Many Points on the Harbor and River

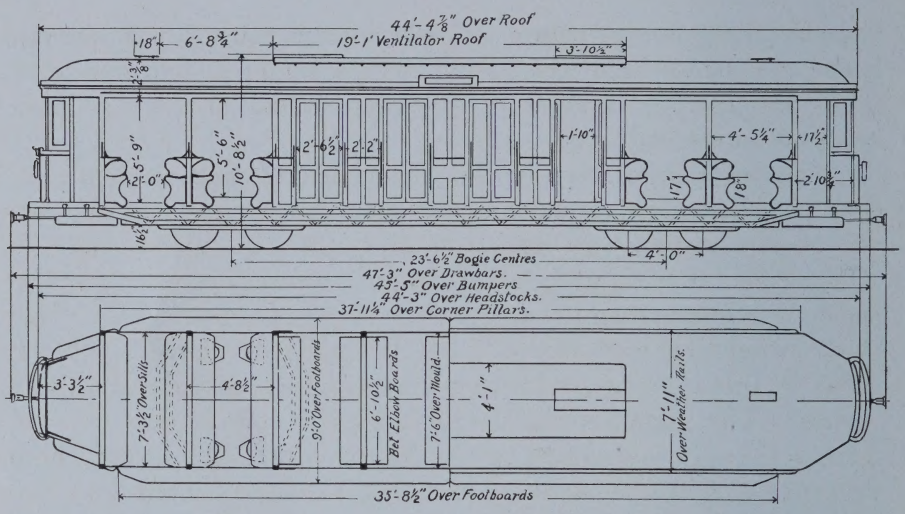
is the old part of the city and is the commercial and governmental section. A view on one of these streets will be seen on the cover of this issue, showing the general post office and in the distance the dome of the Queen Victoria Market, a fine structure which occupies an entire square. The state and municipal government buildings, the hotels, churches and theatres which line these streets bring into this section their daily quota of passengers from the surrounding parts and suburbs and together with the fact that this is the commercial and

manufacturing district with its shops, warehouses, office buildings, banks and factories, and besides must be partly or wholly traversed by nearly all who enter or leave the city by water, rail or street, makes it necessary to take advantage of every means that will aid in securing the adequate transportation facilities demanded by the conditions.

The electric lines extend into the suburbs in every direction, con-

CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—Transfer Station and Waiting Room at the Southern End of George Street—The Business District Occupies Four Parallel Streets Extending for a Mile Between This Point and Circular Quay

necting all the districts within the municipality and in most cases connecting these districts with each other. The arrangement of the lines is exceedingly interesting in its direct and comprehensive scheme. It will be noted that loops are provided at a number of the terminals and at half-way points on the longer lines and evidently they will be ultimately installed on every line to enable all cars to be operated from one end. Steam tram lines serve the more distant suburbs by connecting them with points on the several trunk lines which run into the



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—The Side Elevation Shows the Latticed Girder Construction of the Side Sills—The Flooring Over the Trucks Is Raised 3 Inches to Reduce the Step Heights

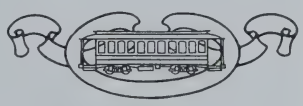
Central Station. Before long these short steam lines will be connected with the lines of the city and suburban system and be electrified.

The lines are owned by the State Government and are under the control of the Railway Commissioners. They have a total trackage of 282 miles, 184 of which is electrically operated. The electric rolling stock consists of 892 motor cars, 81 trail cars and 28 service cars; 80 of the cars, and the trucks under 472 cars, were built by The J. G. Brill Company. The majority of the cars are of the combination open and closed type illustrated, which is admirably adapted to the climatic conditions as the mild winters permit the use of open cars throughout the year. Individually operated sliding doors are arranged to occupy the least space possible between the seat ends and posts of the closed compartment. The cars seat 80 passengers, and, as will be seen from the floor plan, no special provision is made for standing passengers. Weight of car body, 12,300 lbs.; weight of motors, electrical equipment, brakes, etc., 12,775 lbs.; weight of trucks, 7,950 lbs.; total weight, 33,025 lbs.; weight per seated passenger, 414 lbs.

The underframe is of all-steel construction with latticed girder sills. A reduction of three inches in the height of the main part of the car floor is secured by raising the floor that amount over the

trucks. The upper structure is lightly but substantially built, the roof being of the plain arch type. The cars are equipped with four 30 h. p. motors, multiple control and air brakes. Other details may be obtained from the diagrams.

The fares charged average 0.61 d. per mile, the lines being divided into penny sections of about 1¾ miles. For the metropolitan area the average length of the sections is about 1½ miles and the fare 0.55 d. per mile. For eighteen out of the last twenty years the tramways have earned more than the cost of working and interest. The State does not set apart any portion of the earnings for renewals which may hereafter prove a considerable item as a large part of the rolling stock is new. The capital expenditure for the electric lines at June 30, 1909, £3,756,198; the passengers carried for the year, 173,733,133; gross revenue, £1,009,498; working expenses, £785,404; interest on capital, £125,603; profit, £98,491.



PAY-AS-YOU-ENTER CARS FOR THE NORTHERN TEXAS TRACTION COMPANY

BRILL PLAIN ARCH ROOF

IN the March, 1910, number of Brill Magazine a description was given of some full vestibuled single-end interurban cars for the Northern Texas Traction Company built by The G. C. Kuhlman Car Company. In addition to those cars the American Car Company recently delivered to them 15 straight side double-truck closed Pay-As-You-Enter cars.

The platforms are entirely enclosed with sheet steel panels and folding and sliding doors. On the right hand side of the platform the wide opening is divided by a post into exit and entrance passageways which are closed with folding doors. An iron pipe stanchion in the centre of the platform supports the inner end of a pipe partition

rail which on the front platform is swung around to the left of the motorman and fitted into a socket on the inside of the dasher and serves to keep standing passengers on the left side of the forward platform out of the way of the motorman and of passengers leaving the car from the front exit. The bulkhead doors are double sliding doors and are arranged so that they can be individually locked by the conductor. The front exit door slides back into a pocket and is controlled by a lever operated by the motorman. The step folds automatically in conjunction with the operation of the door.

The side sills are 4½ by 7¾-in. yellow pine plated on the outside with $\frac{3}{16}$ by 15-in. steel plate, extending the full length of the car. The cross sills are of oak 2¾ by 5 in. and the end sills oak 4½ by 7¾ in. reinforced on the inside with a ¼ by 5 in. steel plate its full length and with a 6-in. foot at each end. The side panels are of No. 14 gauge sheet steel sheathing. These cars have a seating capacity of 40 passengers. The seats are arranged with 8 reversible cross seats on each side of the car placed against the sheathing between the side posts and two stationary longitudinal seats. There are ten windows on each side of car arranged with top sash stationary and the bottom to raise into shallow roof pocket, the arrangement being similar to the Brill semi-convertible window system except that the upper sash is stationary. The interior of the car is finished throughout in mahogany except from the truss plank to the window sill which is of sheet

Pay-As-You-Enter Cars for the Northern Texas Traction Company—The Sides Including the Vestibule Are Sheathed With Steel—The Cars Are Mounted on Brill No. 39-E Trucks.

PAY-AS-YOU-ENTER CARS FOR THE NORTHERN TEXAS TRACTION COMPANY—The Extra Height Permitted to the Windows by this Roof is a Distinct Advantage

steel painted to conform to the interior finish.

From the figures given below it will be seen that these cars have been built almost as lightly as possible consistent with strength. This result is not only obtained in the general construction of the car but especially in the Plain Arch Roof. By mounting the cars on Brill No. 39-E trucks a large saving is also made as the truck itself is lighter than a double-motor truck and only two motors are required to furnish the traction power.

Length of body	26 ft. 0 in.	Weight of body less electrical equipment (approx.)	14,796 lb.
Length over platforms	39 ft. 0 in.		
Length of platforms	6 ft. 6 in.	Weight of air brake equipment (approx.)	1,500 lb.
Width over sills	8 ft. 9 in.		
From floor to headlining	8 ft. 0 in.	Weight of trucks	9,600 lb.
From step to platform	14 in.	Weight of motors	7,104 lb.
Type of trucks	Brill 39-E		
Motors	G. E. 219. 2-50 h. p.	Total weight	33,000 lb.

NEW ROLLING STOCK FOR THE BOSTON & MAINE RAILROAD

SMOKING AND BAGGAGE CARS

THE Boston & Maine, which has recently been the subject of considerable attention in the railway and daily press because of the retirement of Mr. Lucius Tuttle as president and the election of President Mellen of the New York, New Haven & Hartford to succeed him, is receiving 20 combination smoking and baggage cars built by the Wason Manufacturing Com-

NEW ROLLING STOCK FOR THE BOSTON & MAINE RAILROAD—20 of These 61-ft. Cars Have Recently Been Furnished by the Wason Manufacturing Company

pany. Two of the cars have one platform vestibuled like the car shown in the accompanying engraving and the balance are open platform cars. Each car is 61 ft. long over end sills and weighs complete with trucks 96,000 lbs.

The underframing of the cars is standard on the Boston & Maine. The side sills are 5 by 8½ in.; the center sills 5 by 7⅝ in. and 5 by 3⅝ in. and the two intermediate sills 4 by 7⅝ in. There are also included in the underframe two 12-in. (40 lb. per ft.) I-beams which are spaced 16-in. centers extending through the car from platform to platform. The platforms and bolsters are a patented cast steel type. The truss plank is 2½ by 11⅝ in. yellow pine in one length and extends from one end of the car to within 4 ft. 6 in. of the side sill door opening. There is an inverted iron truss 2 by ½ in. The end sills

are white oak in two pieces, the inside piece being 4 by 8½ in. in size. The side sill tierods are ⅝-in. diameter with ¾-in. drop forged turnbuckles at the centers. The single window braces, corner and vestibule door posts are white oak. The end door posts are mahogany.

The interior finish of the smoking compartment is Mexican mahogany and the same wood is used for the vestibules. A line of mar-

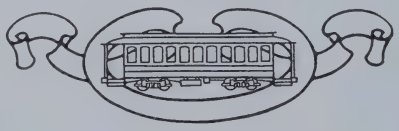
New Rolling Stock for the Boston and Maine Railroad—The Interior Finish of the Smoking Compartment is Mexican Mahogany with Plain Line Marquetry—The Ceilings are Composition and the Seats Upholstered in Pantasote

quetry is placed in all panels and door casings and figured mahogany veneers are used for the large panels. The seats are upholstered in pantasote and the curtains are made from pantasote. There is a saloon with dry hopper. The car is lighted with Pintsch gas.

The baggage compartment is finished in matched North Carolina pine with the upper deck sheathed with whitewood. There are two closets, one for the conductor and one for the baggage master at the

New Rolling Stock for the Boston and Maine Railroad—The Baggage Compartment is Finished in North Carolina Pine and has Two Wardrobe Closets for the Use of the Baggage Master and the Conductor

platform end of the baggage compartment. Each closet has a shelf and drawer and several wardrobe hooks. There is also a baggage master's shelf hinged to the side of the car. The trimmings throughout the cars are oxidized bronze.



CARS FOR THE TRENTON, NEW JERSEY, STREET RAILWAY

PAY-AS-YOU-ENTER EQUIPMENT

THE Trenton Street Railway Company has recently added ten 28-ft closed and full vestibuled Pay-As-You-Enter cars to its equipment. The cars have longitudinal seats, are mounted on Brill No. 39-E trucks, and were built by The J. G. Brill Company. The Pay-As-You-Enter platforms are 5 ft. 10 in. long and as the cars are of the double-end type each platform has

CARS FOR THE TRENTON STREET RAILWAY—These Ten 28-ft. P. A. Y. E. Cars are the First of the Type Ordered for the Trenton Lines

a single sliding exit door on one side and two-section folding doors on the other. The folding doors are hung on three heavy drop forged hinges and the top of the outside door when open is held by a stop fastened to the under side of the platform hood. The stop is so designed that when the doors are folded open the inner face of the stop holds the inner door and the spring catch fastened to the stop engages the out door.

The sliding exit door on the brake staff side of the platform has a hinged window of the same type as used on the Lehigh Valley cars for easy access to the door mechanism and for cleaning the outside window. This door is provided with a handle on the inside only and has a pedal device which is operated by the motorman to open and close the door.

The exit step operates in conjunction with the door in such a manner as to fold the step up when the door is closed and the lower step before the opening of the door exceeds twelve inches. The exit and entrance doors in the bulkheads are both the sliding type.

The side sills of the cars are 4¾ by 6¾ in. in size and are plated with 15 by ⅜-in. steel plate. The end sills, diagonals and also the cross

CARS FOR THE TRENTON STREET RAILWAY—The Seating Capacity is 38.—The Upper Sashes Are Stationary and Lower Drop Into Covered Pockets

sills are white oak, in size respectively 5¼ by 6⅞ in. and 3½ by 5⅞ in.

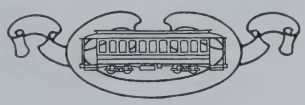
The seating capacity of each car is 38 persons. The windows are the drop-sash type. The interior finish of the cars is ash with birch veneer ceilings. The seats are upholstered in rattan and the curtains are made of pantasote.

The cars are mounted on Brill No. 39-E single-motor trucks with 33-in. rolled steel driving wheels and 21-in. pony wheels. The trucks

have a wheel base of 4 ft. and will be operated over 5 ft. 2 in. gauge track which has curves with not sharper than 45-ft. radius. Each truck carries a 65 h. p. interpole motor.

The principal dimensions of the cars are as follows:

Length of body	28 ft. 0 in.	From tread to platform	1 ft. 1 in.
Length over vestibules	39 ft. 8 in.	From platform to floor	8¾ in.
Length of each vestibule	5 ft. 10 in.	Seating capacity	38
Centers of side posts	2 ft. 8 in.	Type of trucks	Brill No. 39-E
Width over sills	7 ft. 7 in.	Motors	G. E. 210—2-65
Width over posts	7 ft. 9½ in.	Weight of car body less electric equipment	15,140 lb.
Extreme width	8 ft. 1 in.	Weight electrical equipment	1,233 lb.
From sills over trolley boards	9 ft. 3¼ in.	Weight of trucks	10,720 lb.
From track to sills	2 ft. 9⅛ in.	Weight of motors	6,740 lb.
From floor to headlining	8 ft. 3½ in.		
From track to step tread	1 ft. 5⅜ in.	Total weight	33,833 lb.



PASSENGER COACHES FOR PORTO RICO

STEEL UNDERFRAME

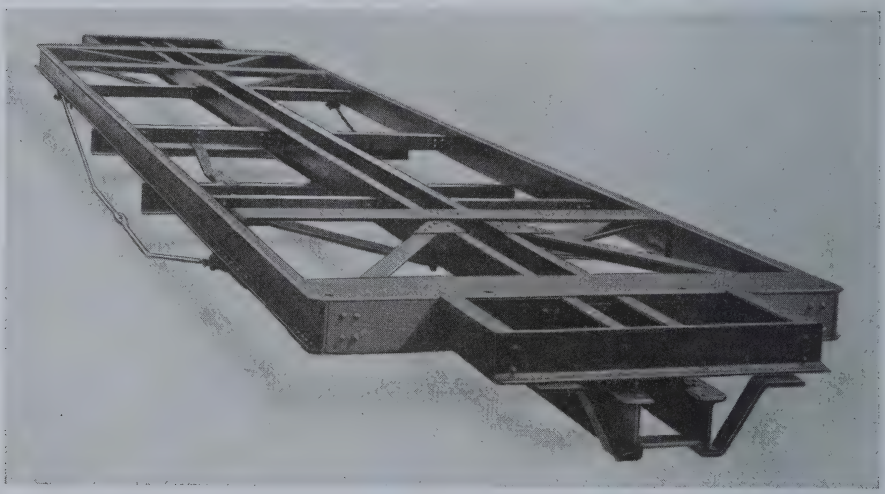
IN the January, 1910, number of Brill Magazine a description was given of passenger cars for the American Railroad of Porto Rico. With the exception of some slight differences in the underframe and seating arrangement and an extra saloon the cars furnished the Fajardo Development Company are of the same construction as those already described.

The town of Fajardo is situated in the most eastern part of Porto Rico on the Fajardo River a few miles in from the coast and has railway connections with the lines encircling the island.

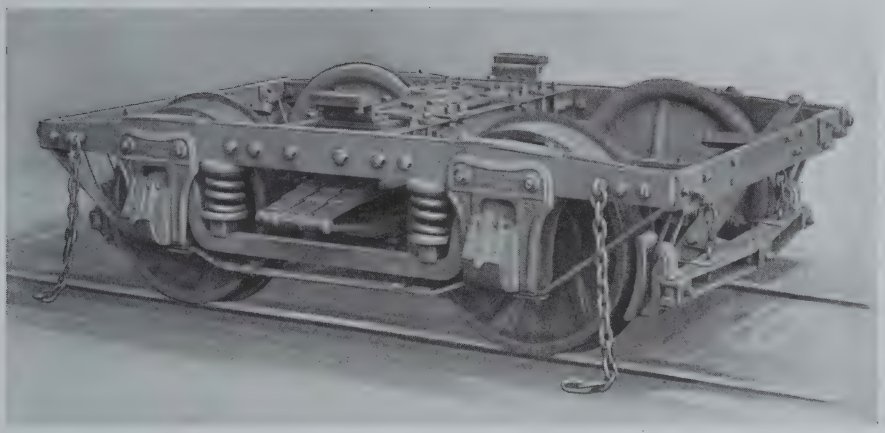
The Fajardo Development Company's car has a saloon at diagonal corners. There are 10 reversible seats, one seat against the saloon and one longitudinal seat on each side of the car making a total seating capacity of 46 passengers. The seats are the Brill "Winner" type, upholstered in rattan and with oak end panels and arm rests. The

PASSENGER COACHES FOR PORTO RICO—This is a Typical Car for Steam Railway Use in the Tropics—The Outside Panels are of $\frac{5}{8}$-in. Mahogany Varnished but not Painted Giving the Car a Very Rich Appearance

upper window sashes are stationary and the lower arranged to raise. The sashes as well as the double blinds, arranged to raise, are of oak. The interior of the car is finished in quartered oak with oak veneer ceilings. All the trimmings are nickel plated including the continuous basket racks. The outside sheathing is of $\frac{5}{8}$-in. mahogany, varnished but not painted, which gives the exterior of the car a very rich finish. The all-steel underframe is composed of 8-in. channels. The majority



PASSENGER COACHES FOR PORTO RICO—All-steel Underframe Constructed of 8 in. Channels with Riveted Connections of Crossing and Braces



PASSENGER COACHES FOR PORTO RICO—All-steel M. C. B. Truck, 4 ft. 6 in. Wheel Base; 1 Metre Track Gage

of cars now built for tropical countries are provided with steel underframes as those of wood are subject to the ravages of white ants and other insects and the long rainy season has a serious effect on wooden supporting members. The crossings are secured to the side frames with forged corner brackets and a steel plate is riveted to both the top and bottom of the end sill for its entire length.

The cars are mounted on all-steel M. C. B. trucks having the following dimensions:

Diameter of wheels	28 in. cast iron	Journals	$3\frac{1}{4}$ in. by 6 in.
Tread	5 in.	Length of axle	5 ft. 4 in.
Flange	$1\frac{1}{8}$ in.	Wheel base	4 ft. 6 in.
Diameter of axles	$4\frac{1}{8}$ in.	Track gage	3 ft. $3\frac{3}{8}$ in.

Following are the principal dimensions of the car described:

Length of body	35 ft. 0 in.	From sills over trolley boards	9 ft. $8\frac{1}{4}$ in.
Length over platforms	40 ft. 4 in.	From floor to headlining	8 ft. 7 in.
Length of front platform	2 ft. 8 in.	From track to step tread	25 in.
Length of rear platform	2 ft. 8 in.	From step tread to platform	16 in.
Centers of side posts	2 ft. 6 in.	Seating capacity	46
Width over sills	8 ft. 6 in.	Weight of car body	21,990 lb.
Extreme width	8 ft. 9 in.	Weight of trucks	11,600 lb.
From track to sills	2 ft. $6\frac{3}{16}$ in.	Total weight	33,590 lb.
From track to center coupler	26 in.		

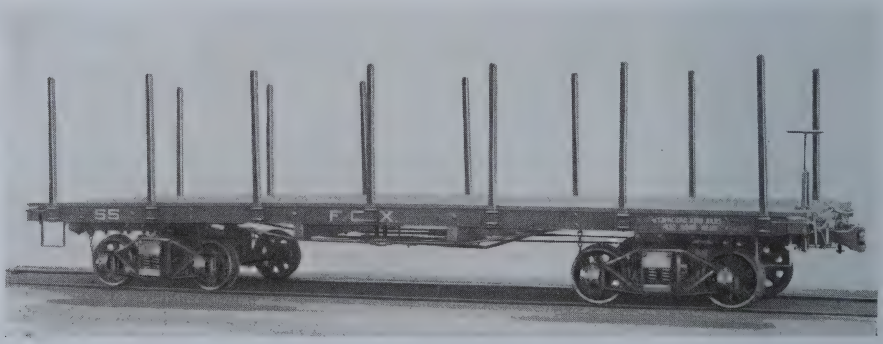
FLAT CARS FOR THE FERRO CARRIL DE XUCHEL

ESPERANZA, MEXICO

IN August, The J. G. Brill Company shipped to its agents in the City of Mexico, the International Machinery and Engineering Company, ten flat cars shown in the accompanying engraving for delivery to the Ferro Carril de Xuchel, Esperanza, Mexico, for steam railway use. The cars are constructed throughout of the best grade of yellow pine, with the exception of the end sills which are of oak.

The side sills are $3\frac{1}{2} \times 7\frac{1}{2}$ in. and the stringers are $3\frac{1}{2} \times 6\frac{3}{4}$ in., both of yellow pine, and the end sills are $6\frac{3}{4} \times 6\frac{3}{4}$ in. oak. The floor is $1\frac{3}{4}$ in. yellow pine. The cars are equipped with M. C. B. standard couplers and have a single brake wheel, operating the brakes on both trucks. They are mounted on Brill No. 55-D Iron Freight Trucks, having a track gage of 4 ft. $8\frac{1}{2}$ in. and a wheel base of 4 ft. 6 in. The wheels are 24 in. cast iron.

Esperanza is in the State of Puebla and lies about 125 miles east of the City of Mexico or just about midway between the City of Mexico and Vera Cruz. This section of Mexico is devoted mainly to agricultural pursuits, sugar cane and hemp being the principal products.

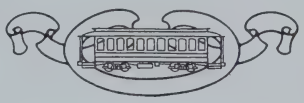


FLAT CARS FOR THE FERRO CARROL DE XUCHEL—The Cars are 30 ft. long and will be used for the Transportation of Cane and Hemp and other Agricultural Products

The cars will be used in the transportation of these products as well as for other general freightage purposes.

In making shipment of these cars, the principal dimensions of which are given, it was found most expedient to choose a water route, so the cars were accordingly knocked down and crated.

Length	30 ft. 0 in.	Weight complete	14,000 lb.
Width over sills	8 ft. 6 in.	Capacity	26,000 lb.



SINGLE-TRUCK PAY-AS-YOU-ENTER CARS FOR ELMIRA

AMONG the cities which have recently added prepayment cars to their equipment is Elmira, N. Y. At the beginning of the present year the Elmira Water, Light & Railroad Company was operating in the neighborhood of 100 cars, most of which were built by the Brill plants, and owned and leased a little over 27 miles of track. This includes the track and equipment of the Elmira and Seneca Lake Traction Company which

SINGLE-TRUCK PAY-AS-YOU-ENTER CARS FOR ELMIRA—This May Be Regarded as a Standard Type of Longitudinally Seated Single-Truck Pay-As-You-Enter Car

Single-Truck Pay-As-You-Enter Cars for Elmira—The Seats Accommodate 28 Passengers—There Are Single Folding Seats at Diagonally Opposite Corners of the Car One of Which is Always Available

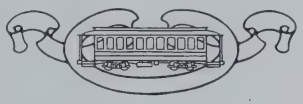
extends from Elmira to Watkins, on Seneca Lake, passing a number of towns and villages, and reaches Watkins Glen, one of the most picturesque parks in the United States.

The J. G. Brill Company recently delivered to the Elmira Water, Light & Railroad Company six single-truck closed Pay-As-You-Enter cars. These cars have longitudinal seats, under which there are six electric heaters, and single window sashes which are arranged to drop into the side walls of the car. The inside finish is cherry with bronze trimmings. The vestibules are each 5 ft. 10 in. long, of the stationary round-end style and fitted with the usual prepayment equipment. At the rear of the car, which has both entrance and exit, there are double swing doors and at the exit at the front end of the car there is a single sliding door. The step at this end folds up when the exit is closed.

The side sills are $3\frac{3}{4}$ by $5\frac{1}{4}$-in. yellow pine plated with $\frac{5}{8}$ by 8-in.

steel plate on the outside. The end sills are of 4½ by 5½-in. yellow pine and the center joists are 3½ by 3½ white oak. The cars are mounted on Brill No. 21-E trucks having a wheel base of 7 ft. 6 in. and 33-in. cast iron wheels.

Length of body	20 ft.		
Length over vestibules	31 ft.	8	in.
Length of each vestibule	5 ft.	10	in.
Centers of side posts	2 ft.	9	in.
Width over sills	7 ft.		
Width over posts	8 ft.		
Extreme width	8 ft.	3¼	in.
From track to under side of side sills		32¼	in.
From sills over trolley boards	8 ft.	6¾	in.
From floor to headlining	7 ft.	10⅝	in.
From track to step tread		15¾	in.
From step to platform		14	in.
From platform to floor		6	in.
Seating capacity		28	
Type of trucks		Brill No. 21-E	
Motors		G. E. 78. 2-35 h. p.	
Weight car body less electric equipment		11,440	lb.
Weight electric equipment		960	lb.
Weight of trucks		5,400	lb.
Weight of motors		5,120	lb.
Total weight		22,920	lb.



SEMI-CONVERTIBLE CARS FOR BANGOR, MAINE

No. 27-M. C. B. HIGH SPEED TRUCKS

THE Bangor Railway & Electric Company recently received two semi-convertible cars from The J. G. Brill Company for use on the suburban portion of its lines. This company serves a population of about 45,000 and owns over 60 miles of track. In their last annual report they show a total of 5,242,645 fare passengers and 5,709,128 transfer passengers carried. Their equipment is composed almost exclusively of Brill cars and trucks. An article on cars and trucks supplied this company was published in Brill Magazine of April, 1907, giving description of the power station at Vezie. The new cars are of the same type as those described in the article referred to, being the Brill semi-convertible, but differing in the platform arrangement. The company finds it

satisfactory and economical to use what is practically a city type of body on interurban trucks as its interurban conditions call for a frequent service with many stops. The choice of the semi-convertible car was made largely on account of the heavy summer traffic, as Bangor is an important center for tourists and during the summer season the cars are taxed to their full capacity. By using drop platforms and a judi-

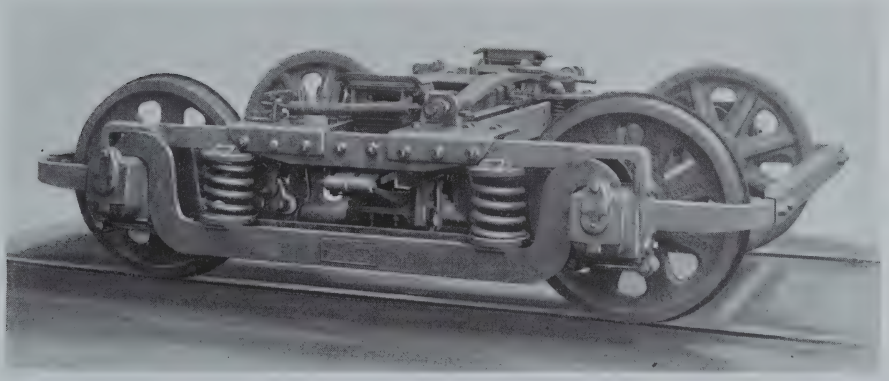
Semi-Convertible Cars for Bangor, Maine—The Seats Being Placed Against the Lining between the Posts gives a Maximum Aisle Width, an Important Factor in Cars Where the Stops Are Frequent

cious distribution of step heights the platform steps are low enough for entrance from the roadway even though the cars are mounted on interurban trucks. The bottom framing is of the standard design used in this type of car and includes a 15-in. steel plate on the inside of the wooden sill, which takes the place of upper and lower trusses and in fact furnishes a better support at the center and ends than possible with trusses and at the same time adds additional stiffness to the side posts

Semi-Convertible Cars for Bangor, Maine—On Account of the Frequent Service and many Stops What is Practically a City Type of Car Has Been Found Most Satisfactory and Economical

to which it is secured. The seat ends are secured to the sills between the posts directly over the sill plates and as they are thus permitted to come between the posts an additional width is permitted for the interior of the car as follows: Thickness of car wall on each side 2 in.; the seats are 36-in. long, leaving an aisle width of 24 in. in a car 8 ft. 4 in. wide over the posts. Leaving out the upper trusses besides leaving room for the seats to be brought to the wall panels enables the window sills to be made 24⅝ in. from the floor, giving an extra high window opening.

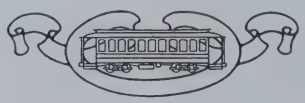
The trucks are of the Brill 27-M. C. B. type similar to those fur-



Semi-Convertible Cars for Bangor, Maine—The Cars are Mounted on Brill No. 27-M. C. B. 1 Trucks which Have Proved Their Easy Running Qualities under Light Cars at all Speeds up to 50 miles an hour

nished to the Public Service Corporation of Newark and for a similar class of service. With its solid forged side frames it is a staunch truck for its weight and has proved its easy riding qualities under light cars at all speeds up to 50 miles an hour. It has a maximum load capacity on center plates of 46,000 lb. The wheel base is 6 ft. and the axles are A. S. I. R. A. standard, 3¾ in. by 7 in. journals; 33-in. steel tired wheels are used and the brake hangers are the half-ball type fitted with A. S. I. R. A. standard shoes. The motor equipment consists of four G. E. 80 type motors.

Length of body	30 ft. 8 in.	From platform to floor	8⅛ in.
Length over vestibules	40 ft. 1 in.	Seating capacity	44
Length of each vestibule	4 ft. 8½ in.	Type of trucks	Brill No. 27-M.C.B.1.
Centers of side posts	2 ft. 8 in.	Motors	G. E. 80. 4-40 h. p.
Width over sills	8 ft. 1½ in.	Weight car body less electric equipment	17,100 lb.
Width over posts	8 ft. 4 in.	Weight electric equipment	1,550 lb.
Extreme width	8 ft. 5¾ in.	Weight of trucks	17,200 lb.
From sills over trolley boards	8 ft. 11⅜ in.	Weight of motors	11,200 lb.
From track to sills	2 ft. 11¼ in.	Weight of brake equipment (approx.)	1,600 lb.
From floor to headlining	8 ft. ⅞ in.	Total weight	48,650 lb.
From track to step tread	1 ft. 7½ in.		
From tread to platform	1 ft. 2½ in.		



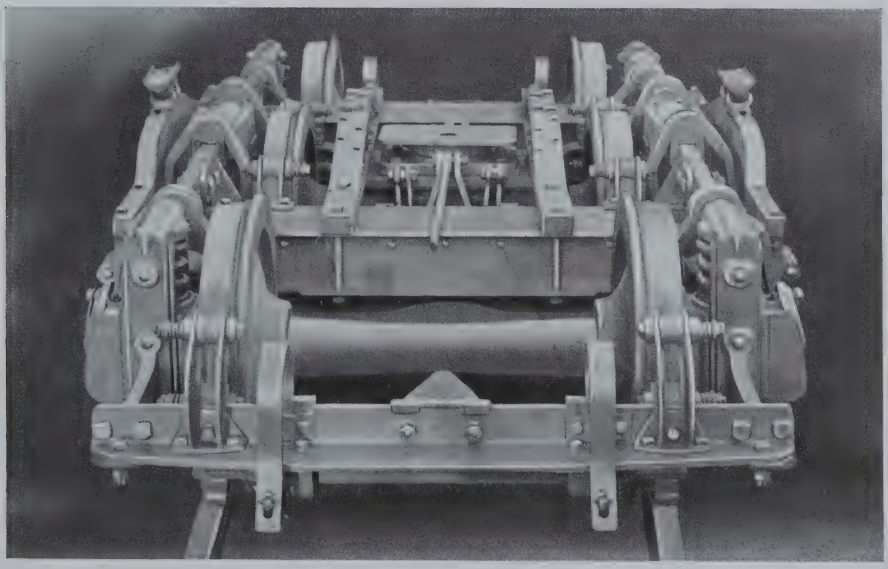
SIX-WHEEL TRUCKS FOR PRESIDENTIAL TRAIN

CENTRAL NORTHERN RAILWAY OF ARGENTINA

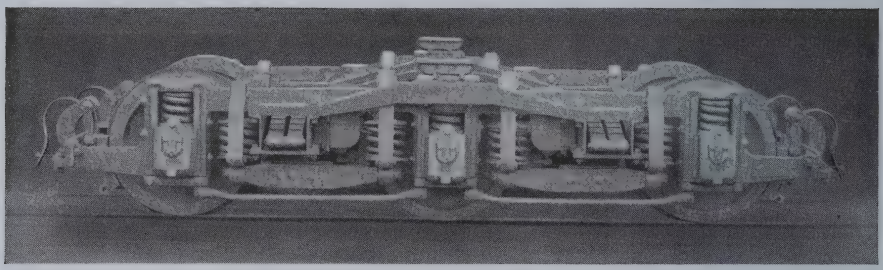
A fine train of four cars known as the Presidential Train was completed in time to be exhibited at the Argentina Centennial Exhibition and was mounted on six-wheel trucks of an interesting design. Brill No. 27-E2 four-wheel trucks have been in service on the Ferro Carril Central Norte for several years and it was desired to have the six-wheel trucks for this

special train of the same type. All the features of the No. 27 type are incorporated, the spring-link suspended equalizing bars, journal springs, solid forged side frames and other frame members. The brake system is simply and effectively arranged and includes Half-Ball brake hangers on the outside hung shoes and the shoes on each side of the center wheels. The long spring base secured by this design and the three sets of springs—double elliptic bolster springs, the springs in the swinging links and the journal springs—provide complete equalization, cushion the side motion and insure easy riding qualities at all speeds. The side frames or wheel pieces are excellent examples of the solid forging process and its unlimited possibilities in relation to truck designing. The length of these side frames is 11 ft. 1 in. The trucks were built for 1 meter (3 ft. $3\frac{3}{8}$ in.) track gage and have a total width of 6 ft. 5 in. Axle centers 4 ft. 6 in.; diameter of wheels, 30 in.; journals $4\frac{1}{4}$ in. by 8 in. Load on each center plate 50,000 lbs.

The Ferro Carril Central Norte is a part of the railway system, about 2000 miles in length, operated by the Argentina Government

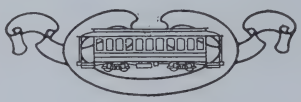


Six-Wheel Trucks for Argentine—The Trucks Were Built for One-Meter Gage Track—Load On Each Center Plate 50,000 Lbs.



Six-Wheel Trucks for Argentine—The No. 27-E2 Six-Wheel Truck is An Adaptation of the Four-Wheel Truck of the Brill Swing-Link Type.

and extends from a point on the Parana River 300 miles northeast of Buenos Aires to Jujuy 700 miles farther north where it connects with the Bolivian Railway.



BRILL AND WASON COMPANIES AWARDED GRAND PRIX

AT the International Railway & Transportation Exposition held at Buenos Aires the Grand Prix was awarded to The J. G. Brill Company and also to the Wason Manufacturing Company. The exhibit of the Brill Company consisted of a 31-ft. semi-convertible car mounted on No. 27-E1 trucks and a 21-ft. 4-in. car mounted on a No. 21-E truck; both cars will be delivered to the Compania LaCroze, Buenos Aires, at the close of the exposition; 4 pairs of No. 27-E2 six-wheel trucks shown in preceding article; seats and springs. The Wason Company exhibited a train of five cars mounted on No. 27-E2 four-wheel trucks which will be turned over to the Ferro Carril Central of Buenos Aires. The train was described and illustrated in the June issue of Brill Magazine and consists of a first-class car, two second-class cars, one dining car and one combination baggage and mail car.

LIGHT WEIGHT TRAIL CARS FOR THE OGDEN RAPID TRANSIT COMPANY

BRILL PLAIN ARCH ROOF

THE Ogden Rapid Transit Company connecting Ogden, Hot Springs, Glenwood Park and Ogden Canyon, all in Utah, at present controls 80 miles of electric railway and 9 miles of steam. Besides this they now contemplate building an additional line of 14 miles. This company recently received three cars of the type shown from the American Car Company. The cars are of a closed type with stationary round front vestibule and folding doors. The top sashes are stationary and the lower arranged to drop and the seats are arranged with eight reversible and two stationary seats on each side of the car. The car is of the Brill Plain Arch Roof type, a good description of which was given in last month's BRILL MAGAZINE in the article on the Convention Car built by The J. G. Brill Company. This roof adapts itself very readily to this type of car, which is built with one aim always in view —lightness, as it not only reduces the weight of the car roof but also adds strength to the whole upper portion of the car, thus allowing a somewhat lighter side construction. The side sills are 5-in. I beams

TRAIL CARS FOR THE OGDEN RAPID TRANSIT COMPANY—The Brill Plain Arch Roof not only Reduces the Weight but adds to the Strength—The Cars Are Mounted on Brill No. 420 Trail Trucks

Trail Cars for the Ogden Rapid Transit Company—The Simplicity of the Overhead Arrangements in These Cars is Novel and Attractive

and the end sills are of white oak. From this construction it can be seen that the underframing is built with a view to doing away with unnecessary weight which is also followed out in the truck equipment, the cars being mounted on Brill No. 420 light weight trail trucks.

Length of body	28 ft. 0 in.	Weight of car body less electrical equipment	10,000 lb.
Length over platforms	37 ft. 0 in.		
Length of front platform	4 ft. 6 in.	Weight of air brake equipment	1,050 lb.
Length of rear platform	4 ft. 6 in.		
Width over sills	7 ft. 3¾ in.	Weight of trucks	5,495 lb.
Width over posts	8 ft. 2 in.		
Seating capacity	40	Total weight	16,545 lb.

UNLOADING CARS AT DESTINATION

ONE SUCCESSFUL METHOD

ONE of the problems in connection with an order of cars is their unloading on receipt at destination and sometimes the labor is a considerable item of expense. The manner in which the Virginia Railway & Power Company unloaded 20 cars, described on another page of this issue, at a cost of $2.66 per car is shown in an accompanying engraving. A stationary timber gantry was built over the track on which the new cars were delivered. Each car to be unloaded was brought on its flat car directly beneath the timber structure and raised from the flat with four triplex blocks. Then while the car body was suspended in the cradle the flat car was removed and the trucks brought in position so that the car could be lowered on them. As soon as this was done, the car on its trucks could be easily moved out of the way.

UNLOADING CARS AT DESTINATION—With this Arrangement the Virginia Railway & Power Company Unloaded 20 Cars at a Cost of $2.66 Per Car

BRILL MAGAZINE

Published on the fifteenth of each month by the

PUBLICITY DEPARTMENT OF THE J. G. BRILL COMPANY

In the interests of The J. G. Brill Company, American Car Company, John Stephenson Company, G. C. Kuhlman Car Company, Wason Manufacturing Company, Danville Car Company, Compagnie J. G. Brill.

IN the October number of BRILL MAGAZINE mention was made of the third annual announcement of the Brill prizes for senior theses on car designs. These announcements were mailed on October 20 to nearly 150 colleges and technical schools throughout the United States. Since then we have had numerous requests for additional copies of the announcement, and a number of requests for information and material from students desiring to enter the contest and submit theses. We have had a few inquiries from the heads of engineering departments relative to placing students during the summer months and will probably receive more. Electric railway engineering is a branch of technical work that has never been over crowded and there are always openings for good men. The Brill prizes are offered primarily in order to attract technical students to the electric railway field, in the hope that once interested they may elect to specialize in that branch. The contest is looked upon with favor by the American Street and Interurban Railway Association and in fact all three of the judges who pass upon the merits of the theses are members of that association. Under these circumstances we have every reason to believe that we will have the co-operation of all the members, including the railway equipment manufacturers. With the co-operation of the railway companies interested in this educational work and with the opportunities afforded at the Brill plants, it is probable that each student can be so placed as to enable him to demonstrate his ability in this line. In connection with this, BRILL MAGAZINE wishes to hear from those companies that are on the lookout for good men, stating how many they could place during the summer of 1911, and in just what line.

IN the series of leading articles which we have been running for the last two years, no less than 15 types of cars used in the principal cities of the United States have been shown to be essentially different from each other and possessing certain distinctive features. Car body and platform lengths, seating arrangements and capacities, weights, motors and trucks, all vary to such an extent that

it may readily be perceived what a multiplicity of conditions have been considered and how great the divergence of individual opinion as to how the desired results may be accomplished. Possibly the railway operator has been too liable to view his particular field of action with a paternal eye, and his mental vision, a little circumscribed perhaps by assiduous study of local conditions, is acutely sensitive to that which is peculiar, distinctive and individual and may lead him to introduce features which interfere with what is essential for economical operation—in other words, cause him to lose in some particulars his sense of proportion. The car builder has not only faced the problem of special designing for stated conditions but, as a self protective measure, has been compelled to make provision for the severe conditions common to every road, such as rough tracks, excessive speed, overloading, etc., and has at times furnished a more heavily constructed car than necessary. This general variance in types of cars is unscientific and, at this time, when every possibility for the reduction of operating expense is being investigated by railway companies, it borders on extravagance. The cost of designing, construction and repairs is necessarily great, for special patterns and castings must be made, machinery specially arranged and it has even been necessary to construct a sample car for experimental purposes before proceeding with the order. A comprehensive survey of the situation reveals the fact that these local differences largely responsible for the divergence in types of cars, are not as extreme as is generally imagined and it would appear that a comparatively few types would meet all contingencies. For example, it is probable that for a large percentage of the city systems in this country, a 28 ft. 10 in. semi-convertible car body with 2 ft. 6 in. post centers, and seven transverse seats on each side at the center with longitudinal seats occupying the space of two windows each at the corners, would give the most satisfactory results.

THE opportunity for "getting together" afforded by the yearly A. S. I. R. A. Convention is undoubtedly its best feature. Its atmosphere of progress and mutual interest is full of the ozone of optimism and good fellowship. Under its influence the renewal of old acquaintanceships and the making of new is particularly agreeable and easily leads to the interchange of thoughts on important subjects and the establishment of mutual understandings. In such an atmosphere, away from the regular business surroundings and yet there on business, the social relationship comes more to the front making it easier to get under the surface of things and learn

things in their truer relations and to make and receive deeper impressions. Personality is a factor in business relations and it is an advantage to both sides in a business transaction for each to know the other personally. And so we get together each year to know more of each other, for progress, for mutual interest and for good fellowship.

A MARKED improvement in commercial ethics has been plainly evidenced in all lines within the last few years and the tendency to regard business as a "game," in which shrewdness and chicanery are all important factors is rapidly declining. Though we dislike to cast reflections upon the honesty of our progenitors, we are forced to admit that the unfortunate tendency (which might be termed an instinct) is atavistic and hence the difficulty of its complete subversion. History, ancient and modern, is replete with examples of sharp practice and Nature is an incorrigible repeater. As school boys we swapped and traded, with ever an eye to the main chance and to successfully trade a plug-ugly without detection of the fraud was a feat over which we gleefully chuckled and vaingloriously boasted. That men are but children of a larger growth is a Shakespearian axiom and though the lapse of years alters the externization of our motives, the motives remain intact. We shall not attempt to trace the current of evolution, which is responsible for this higher conception of business principles, to its source, or follow it through the sinuous channel which all reformative movements inevitably take. We realize that the new era is upon us and that the mistakes of the past are being gradually forgotten. The "heads I win; tails you lose" method is not only unmoral, but, what is infinitely more to the purpose, unprofitable. There must be mutual advantage or there will be mutual disadvantage; mutual satisfaction or ultimate dissatisfaction, and, mutual profit or there will accrue mutual loss. Under the new regime, the reputation of the house becomes a paramount consideration. Reputation depends for its existence upon worthiness and thus the elimination of the non-reputable dealer becomes simply a matter of time. Suspicion and antagonism, elements inimical to progress, are being eradicated and shrewd tactics, so eminently unsatisfactory and unscientific, are being relegated to the scrap heap of antiquated methods. The adoption of a purer system of business ethics is merely a recognition of the truth of the ancient proverb—honesty is the best policy. It is not a new idea but rather the materialization of an old ideal.

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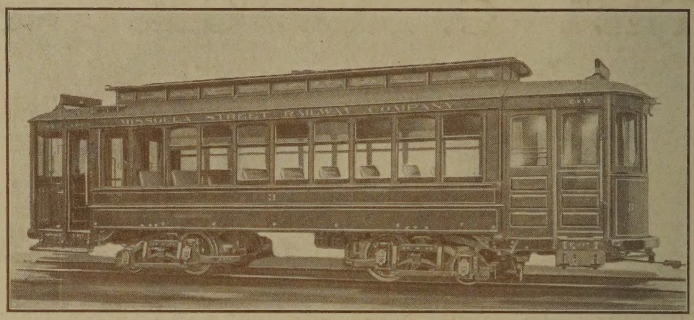

BRILL SEMI-CONVERTIBLE CAR ON No. 39-E SINGLE MOTOR TRUCKS

Many roads in the smaller cities which have used single truck cars are finding that, with the adoption of prepayment equipment, it is wise to adopt Single-Motor Trucks also. The cost of operation is practically the same and the larger cars are favored by the public and provide for growth. Prepayment cars on Brill No. 39-E trucks, if the cars embody the Brill Semi-Convertible Window Arrangement, are thoroughly modern cars for all-the-year-around service. The window arrangement increases the interior width, does away with unsanitary wall pockets which are a continual nuisance and source of maintenance expense, and provides a bright, light car.

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